

Lesson 1.3: Real Numbers and the Number Line

**Real numbers** are numbers you use in everyday life. Each number corresponds to exactly one point on a \_\_\_\_\_.

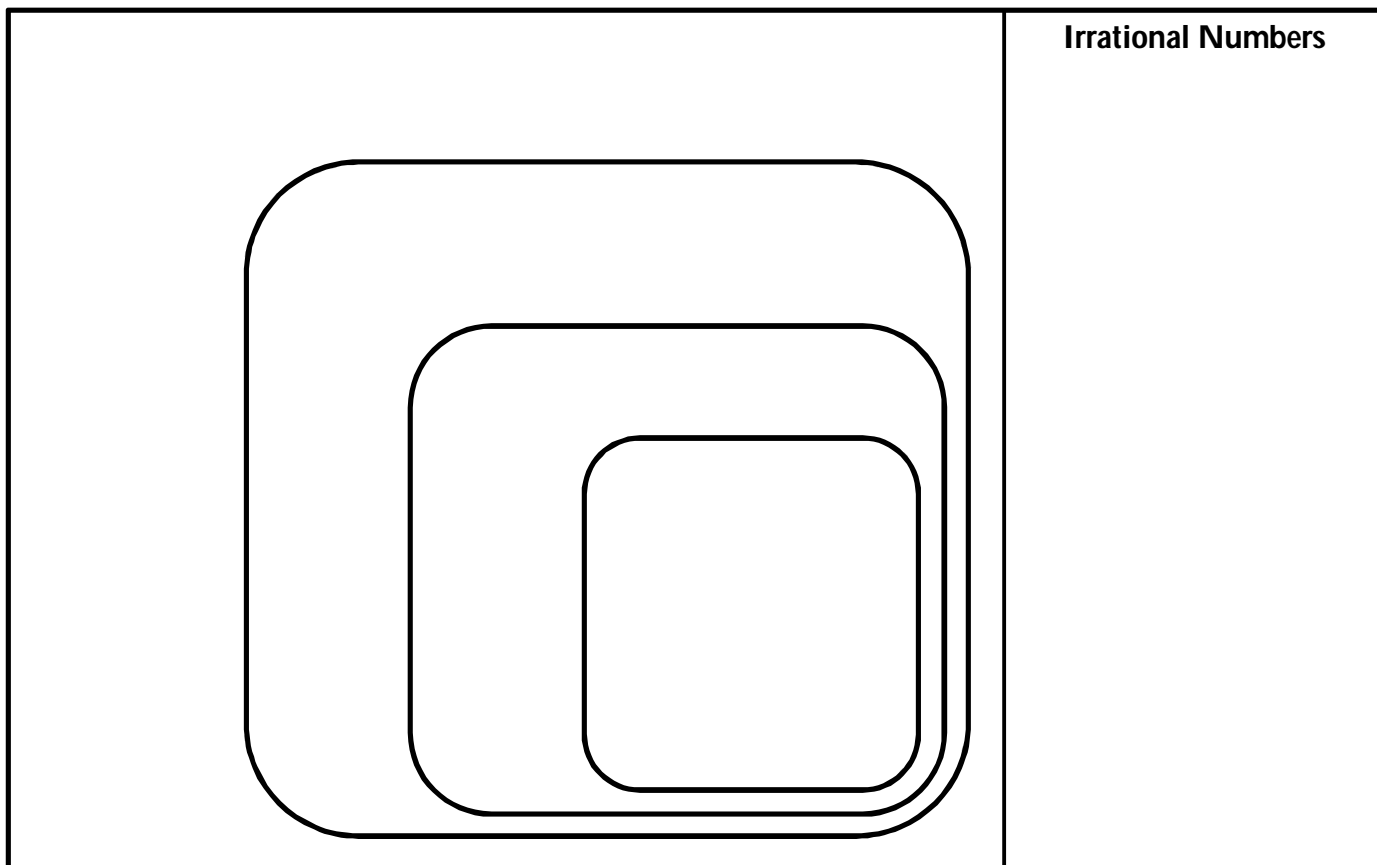
A **perfect square** is a square with the area found by given side values like 1, 2, 3, and so on. The **square root** is backwards of a perfect square; you must determine the side from the given area.

List out the *perfect squares* from 1 to 20:  $1^2 = 1, 4,$  \_\_\_\_\_  
\_\_\_\_\_

Venn diagram – graph used to describe the different subsets of the Real numbers (R)

**Real Numbers**

**Irrational Numbers**



Rational numbers (Q) can be described as a \_\_\_\_\_ of integers (decimal repeats or terminates).

Natural numbers (N), {1, 2, 3, 4, 5, ...} \_\_\_\_\_ does not occur “naturally.” [Egyptians]

Whole numbers (W), { \_\_\_\_\_ } natural numbers plus \_\_\_\_\_

Integers (Z), { \_\_\_\_\_ } includes \_\_\_\_\_ numbers [opposites]

Irrational numbers (I) are **not** \_\_\_\_\_. Therefore, the decimal does \_\_\_\_\_ terminate or repeat.

Extend: What kind of numbers do not lay within any of the sets of our Venn diagram?

\*\* To classify numbers into the proper sets, make sure you include all possible sets for that number.

Example 1: Name the set(s) to which the following belong?

a)  $-\frac{2}{3}$  : \_\_\_\_\_ d)  $-\sqrt{100}$  : \_\_\_\_\_

b)  $\pi$  : \_\_\_\_\_ e) 23.3 : \_\_\_\_\_

c) 0 : \_\_\_\_\_ f)  $i = \sqrt{-1}$  : \_\_\_\_\_

Example 2: Compare and contrast two numbers

a)  $-3$  and  $\sqrt{3}$

b)  $\sqrt{10}$  and  $\pi$